

Claims

1.- System for controlling the operation of presence detection devices in an automobile, which comprises in combination:

5 a) external presence detection means (4) for detecting the entry of objects in a certain observation area outside said automobile;

 b) at least one power supply (5) for supplying at least said external presence detection means (4);

10 c) an electronic system (6) including at least means for processing and analyzing first input signals obtained by said external presence detection means (4) and which produces first output signals according to the result of said analysis, and

 d) condition detection means (7) of at least one closing device of at least one door of said automobile, associated and cooperating with said
15 electronic system (6),

characterized in that said power supply (5) is controlled by said electronic system (6), according to the state, situation of locking/unlocking or opening and closing sequence of at least said closing device of said door, of which there is at least one, of said automobile.

20 2.- Control system according to claim 1, characterized in that it also comprises internal presence detection means (8), which are associated with and cooperate with said electronic system (6) to control said power supply (5), also according to the presence or absence of people inside the automobile.

25 3.- Control system according to claim 2, characterized in that it also comprises tilt detection means (9), which are associated with and cooperate with said condition detection means (7) of at least one closing device of at least one automobile door and said internal presence detection means (8), to produce second input signals for electronic system (6), also according to the vehicle's tilt with respect to the plane of the ground on which said vehicle is

standing, conditioned by various circumstances such as load, presence of passengers or braking, thanks to said tilt detection means (9).

4.- Control system according to claim 3, characterized in that said tilt detection means (9) are associated with and cooperate with said electronic system (6), when the vehicle starts to move or once it has stopped, to vary the area of observation to be covered by said external presence detection means (4), according to the vehicle's tilt with respect to the plane of the ground on which said vehicle is standing.

5.- Control system according to claim 3, characterized in that electronic system (6) comprises at least one timer and/or at least one remote control, which are associated with and cooperate with at least said condition detection means (7) of said closing device of said automobile door, to control said power supply (5).

6.- Control system according to claim 2, 3 or 5, characterized in that the control of said power supply (5) includes activating or deactivating said power supply by means of electronic system (6).

7.- Control system according to claim 1, characterized in that said external presence detection means (4) comprise at least one electromagnetic detection device.

8.- Control system according to claim 7, characterized in that said electromagnetic detection device comprises at least one element in a group including a camera, an infra-red system, a radar system and an ultrasound system, or a combination thereof.

9.- Control system according to claim 1, characterized in that external presence detection means (4) include at least one magnetic field distortion detection device.

10.- Control system according to claim 7, characterized in that external presence detection means (4) also include at least one magnetic field distortion detection device in combination with said electromagnetic detection device, of which there is at least one.

11.- Control system according to claim 10, characterized in that it includes at least two of said electromagnetic detection devices and/or at least two of said magnetic field distortion detection devices, one on each side of the automobile.

5 12.- Control system according to claim 8, 9, 10 or 11, characterized in that the electromagnetic detection devices and/or the magnetic field distortion detection devices are mounted, at least partially, in respective external rear-view mirror housings on said automobile.

10 13.- Control system according to claim 1, 8, 9 or 10, characterized in that said external area of observation exterior covers at least one blind spot.

14.- Control system according to claim 2, characterized in that said internal presence detection means (8) include at least one device in a group including at least one weight sensor, at least one capacity sensor, arranged on at least one automobile seat, at least one infra-red detector, at least one
15 microwave detector and at least one camera, arranged inside the vehicle, or a combination thereof.

15.- Control method for the operation of presence detection devices in an automobile, comprising external presence detection means (4) for detecting the entry of objects in a certain area of observation external to said
20 vehicle, at least one power supply (5) for powering at least said external presence detection means (4), an electronic system (6) including at least means for processing and analyzing first input signals obtained by said external presence detection means (4) and which produces first output signals according to the result of said analysis, and condition detection means (7) of
25 at least one closing device of at least one automobile door, which are associated with and cooperate with said electronic system (6), **characterized** in that it comprises controlling said power supply (5), by means of said electronic system (6), according to the state, situation of locking/unlocking or opening and closing sequence of at least said closing device of said
30 automobile door, of which there is at least one.

16.- Control method according to claim 15, characterized in that it comprises controlling said power supply (5), by means of said electronic system (6), also according to the presence or absence of people inside the automobile, using internal presence detection means (8), which are associated with and cooperate with said electronic system (6).

17.- Control method according to claim 15 or 16, characterized in that it comprises controlling said power supply (5), by means of said electronic device (6), also according to the condition, activated or deactivated, of the vehicle ignition.

18.- Control method according to claim 17 when subordinate to claim 15, characterized in that, when power supply (5) and the vehicle ignition are deactivated and the vehicle itself is also stopped, it comprises the following steps:

- a) detect a door opening action or opening and closing sequence,
- b) activate power supply (5) following said detections,
- c) activate a timer included in electronic system (6), when closing said door, for a time T1, maintaining power supply (5) activated, and
- d) deactivate power supply (5) if after said time T1 the vehicle ignition is still not activated.

19.- Control method according to claim 18, characterized in that it also comprises, after said step d), the following steps:

- e) reactivate power supply (5) if step d) has been performed and a second door opening action or opening and closing sequence has been detected,
- f) reactivate said timer, for a time T2, when closing the door, and
- g) maintain power supply (5) activated if after said time T2 the vehicle ignition has been activated.

20.- Control method according to claim 19, characterized in that said times T1 and T2 are equal.

21.- Control method according to claim 17 when subordinate to claim 15, characterized in that, when power supply (5) is activated and the vehicle
5 ignition is deactivated and the vehicle itself is also stopped, it comprises the following steps:

a) detect a door opening and closing sequence,

b) activate a timer incorporated in electronic system (6), for a time T1,
and

10 c) deactivate power supply (5) if after said time T1 the vehicle ignition has still not been activated.

22.- Control method according to claim 21, characterized in that it also comprises, after said step b), the following step, as an alternative to step c):

15 d) deactivate the time if a second door opening action has been detected,

23.- Control method according to claim 22, characterized in that it also comprises, after said step d), the following step:

e) reactivate the timer if a second door closing action has been detected.

20 24.- Control method according to claim 17 when subordinate to claim 16, characterized in that when power supply (5) and the vehicle ignition are deactivated and the vehicle itself is stopped, it comprises the following steps:

a) detect a door opening action,

25 b) detect the presence of at least one person inside the vehicle, using the said internal presence detection means (8),

c) detect a closing action of said door, and

d) activate power supply (5) following said detections.

25.- Control method according to claim 17 when subordinate to claim 16, characterized in that when power supply (5) is activated, the vehicle

ignition is deactivated and the vehicle itself is stopped, it comprises the following steps:

- a) detect a door opening action,
- b) detect the absence of a person who was inside the vehicle, using
5 said internal presence detection means (8),
- c) detect a closing action of said door, and
- d) deactivate power supply (5) following said detections.

26.- Control method according to claim 17 when subordinate to claim
16, characterized in that it also comprises producing second input signals for
10 electronic system (6), also according to the vehicle's tilt with respect to the
plane of the ground on which the vehicle is standing, conditioned by various
circumstances such as load, presence of passengers or braking, using for this
purpose tilt detection means (9), which are associated with and cooperate
with said condition detection means (7) of at least one closing device of at
15 least one automobile door and said internal presence detection means (8).

27.- Control method according to claim 26, characterized in that it also
comprises varying the area of observation to be covered by said external
presence detection means (4), when the vehicle starts to move or once it has
stopped, according to the vehicle's tilt with respect to the plane of the ground
20 on which the vehicle is standing, using for this purpose said tilt detection
means (9), which are associated with and cooperate with said electronic
system (6).

28.- Control method according to claim 26, characterized in that it
comprises detecting the vehicle's tilt when the ignition is deactivated, the
25 vehicle is stopped and a door opening action has been detected.

29.- Control method according to claim 28, characterized in that it
comprises detecting the vehicle's tilt when the ignition is activated and the
vehicle is running.

30.- Control method according to claim 17 when subordinate to claim
30 15, characterized in that when power supply (5) and the vehicle ignition are

deactivated and the vehicle itself is also stopped, it comprises the following steps:

- a) detect an activation signal from a remote control, or key, included in electronic system (6),
- 5 b) detect a door opening and closing sequence, and
- c) activate power supply (5) following said detections.

31.- Control method according to claim 17 when subordinate to claim 15, characterized in that when power supply (5) is activated, the vehicle ignition is deactivated and the vehicle itself is also stopped, it comprises the
10 following steps:

- a) detect a door opening and closing sequence,
- b) detect a deactivating signal from a remote control, or key, included in electronic system (6), and
- c) deactivate power supply (5) following said detection.